

REMARKS/ARGUMENTS

The present application has been reviewed in light of the Final Office Action dated April 27, 2010. Claims 1-3, 5-11, and 70-72 are pending in this application. Claims 1, 5, and 8 have been amended, claim 4 has been cancelled, and claims 12-69 have been previously withdrawn. Claim 1 is in independent form. Applicants respectfully request reconsideration of these rejections and reexamination of the above-identified application in view of the amendments made to the claims and the remarks below.

Applicants respectfully reserve the right to file at least one divisional application to non-elected claims 12-69.

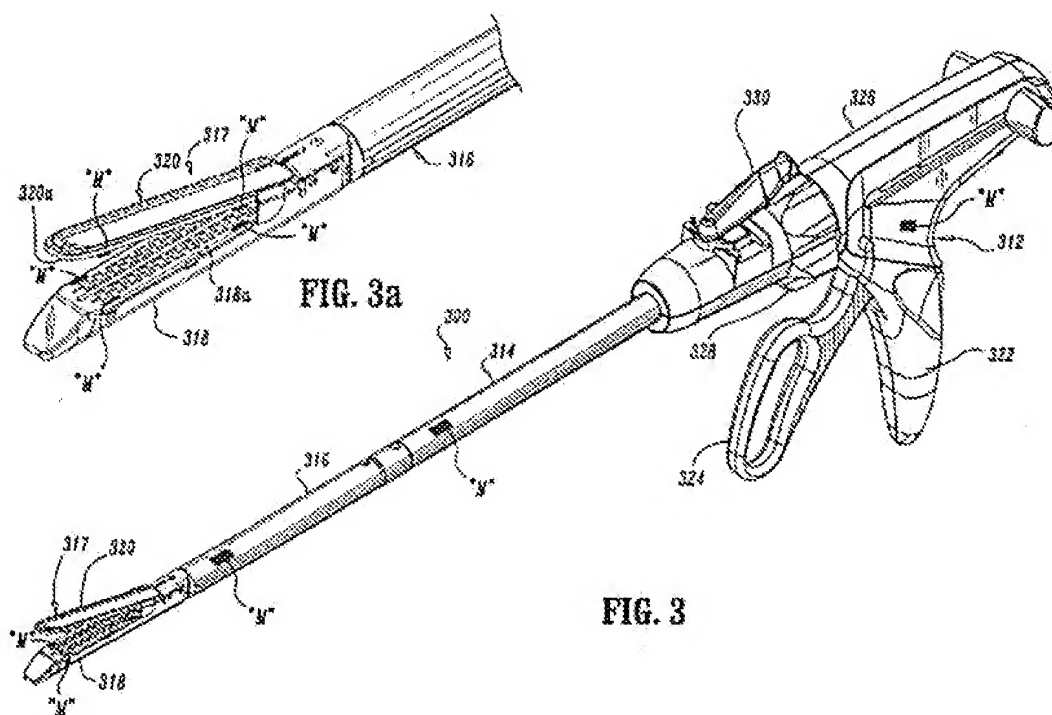
Claims 1-3 were rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by U.S. Patent No. 6,972,199 to Lebouitz (hereinafter "Lebouitz"). Applicants respectfully submit that claim 1, as amended herein, is allowable over Lebouitz.

MPEP §2131 states that "[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." (*Citing Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987)).

Applicants submit that Lebouitz does not anticipate each and every element of amended independent claim 1. Independent claim 1 presently recites, in pertinent part, *a plurality of discrete micro-electromechanical system (MEMS) devices selectively disposed from a proximal end to a distal end of the surgical instrument on the following portions of the surgical*

instrument: (i) a first end and a second end of the anvil assembly (ii) a first end and a second end of the staple cartridge assembly, (iii) the body member, and (iv) the handle assembly, for at least one of sensing a condition, measuring a parameter and controlling the condition and/or parameter adjacent the end effector.

As seen in at least FIGS. 1-4 of the present disclosure (only FIGS. 3, 3A being reproduced below by way of example), a surgical stapling instrument includes several discrete MEMS "M" that are disposed on several portions of the surgical instrument, such as the anvil assembly, the staple cartridge assembly, the body member, and the handle assembly. Each MEMS device is a single integral device that is operationally independent of other MEMS devices configured to communicate with the surgical instrument and which are each disposed on a separate substrate. (see page 22, lines 8-11).

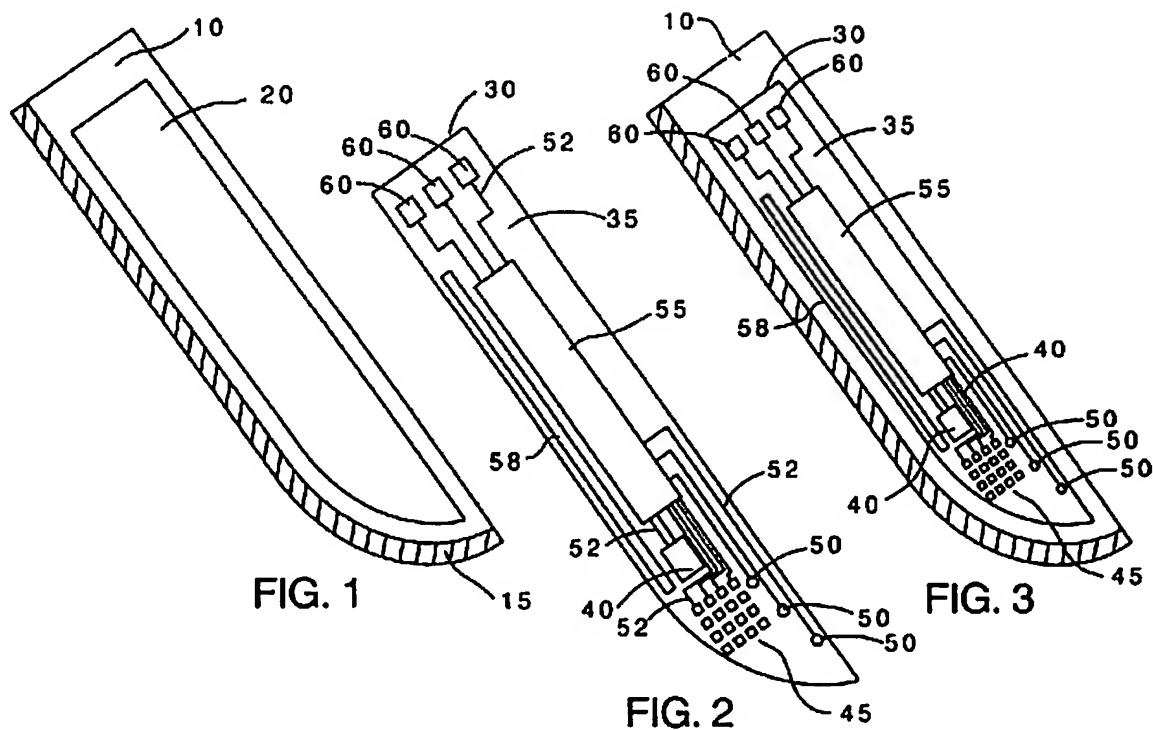


Lebouitz does not disclose "...a plurality of discrete micro-electromechanical system (MEMS) devices selectively disposed from a proximal end to a distal end of the surgical instrument on the following portions of the surgical instrument: (i) a first end and a second end of the anvil assembly (ii) a first end and a second end of the staple cartridge assembly, (iii) the body member, and (iv) the handle assembly, for at least one of sensing a condition, measuring a parameter and controlling the condition and/or parameter adjacent the end effector," as recited in amended independent claim 1.

In particular, Lebouitz is directed to a cutting instrument including a metal blade that has a recess formed therein and a semiconductor substrate affixed to the blade in the recess. The semiconductor substrate includes at least one sensor formed thereon. The sensor formed on the semiconductor substrate may comprise at least one or an array of a strain sensors, pressure sensors, nerve sensors, temperature sensors, density sensors, accelerometers, and gyroscopes. (Abstract)

With regard to FIG. 3 of Lebouitz, reproduced below, sensor element 30 is bonded into recess 20 of blade 10 using any one of a number of adhesives (column 6, lines 46-54). Additionally, sensor element 30 includes semiconductor substrate 35, preferably made of silicon. Formed on semiconductor substrate 35 are sensor 40 and sensor array 45, comprising a plurality of individual sensors. Sensor 40 and the individual sensors forming sensor array 45 can be any one of the well known types of sensors described herein, for example, a strain sensor, a pressure sensor, a temperature sensor, a density sensor, a motion sensor, or any other sensing device that can be formed on semiconductor substrate 35. (Column 5, lines 29-38). Thus, Lebouitz teaches

a sensor array located on only one portion (i.e., the distal portion or blade) of the cutting instrument.



In contrast, in the present disclosure, a plurality of MEMS devices are disposed on several portions of the surgical instrument, such as the anvil assembly, the staple cartridge assembly, the body member, and the handle assembly, as clearly illustrated in FIGS. 3, 3A (reproduced above). For example the MEMS devices are positioned (i) on the inner clamping portion of the end effector 317, (ii) on the disposable loading unit 316, (iii) on the elongated body 314, and (iv) on the handle assembly 312. Support for such feature(s) can be found at least from FIG. 3 and page 15, line 29 to page 16, line 2. In other words, multiple MEMS are distributed or positioned, in multiple discrete sections, throughout the surgical instrument and are

not confined only to the distal end of a device (e.g., a blade), as in Lebouitz. Additionally, each MEMS device is disposed on a separate substrate, in contrast to Lebouitz, where a sensor array 45 is disposed on a single substrate.

Applicants therefore respectfully submit that, in view of the amendments made to claim 1 herein, and in view of the arguments presented above, that claim 1 is allowable over Lebouitz. Claims 2-3 depend, either directly or indirectly, from claim 1 and contain all of the features of claim 1. The arguments overcoming the rejection to claim 1 are applicable as well to claims 2-3. Applicants submit that claims 2 and 3 are also unanticipated by Lebouitz.

Claims 1-10, 70, and 72 were rejected under 35 U.S.C 103(a) as allegedly being unpatentable over Hooven (U.S. Patent No. 5,518,163) in view of Wang et al. (U.S. Application No. 2004/0236352) and Lebouitz. Applicants submit that claim 1 is allowable over the applied combination of Hooven, Wang, and Lebouitz. Claim 4 has been cancelled herein.

Applicant submits that Hooven fails to disclose at last that the MEMS sensors that are integrated devices disposed on separate substrates, as called for in independent claim 1.

Moreover, at page 4 of the present Final Office Action, the Examiner stated that Hooven does not disclose "the MEMS devices are disposed along an entire length of the surgical instrument including the handle assembly, the elongate member, and the end effector." The Examiner relied on Wang and Lebouitz to cure such deficiencies. However, the teachings of both Wang and Lebouitz, taken alone or in any proper combination with the teachings of Hooven, do not render obvious the subject matter of amended independent claim 1 as a whole.

Specifically, Wang states that each joint Jm1 -Jm5 has a position sensor which provides feedback signals that correspond to the relative position of the handle [0024]. Additionally, when the surgeon moves a handle, the position sensors provide feedback signals M1-M5 that correspond to the movement of the joints Jm1-Jm5, respectively [0027]. In other words, the sensors are only located on the robotic arm, which is a portion of the entire system, the system being the several multiple instruments and several robotic arms. In contrast, in the present disclosure and as recited in the claims as amended, a plurality of discrete micro-electromechanical system (MEMS) devices are disposed on several portions of the surgical instrument, such as the anvil assembly, the staple cartridge assembly, the body member, and the handle assembly. Additionally, in the present disclosure, each MEMS device is disposed on a separate substrate, in contrast to Lebouitz, where a sensor array 45 is disposed on a single substrate.

Applicant submits that Lebouitz does not teach and/or suggest the subject matter of amended claim 1 for at least the reasons presented above. In addition, as discussed above, Wang and Lebouitz do not cure the deficiencies of Hooven.

Applicants therefore respectfully submit that, in view of the amendments made to independent claim 1 herein, and in view of the arguments presented above, that independent claim 1 is allowable over Hooven, Wang, and Lebouitz. Since claims 2-3, 5-10, 70, and 72 depend, either directly or indirectly, from claim 1 and contain all of the features of independent claim 1, Applicants respectfully submit that the subject matter of each of claims 2-3, 5-10, 70, and 72, as a whole, is not obvious under 35 U.S.C. §103(a) over Hooven, Wang, and Lebouitz.

In view of the foregoing, for at least the reasons that amended independent claim 1 is allowable over Hooven in view of Wang and Lebouitz under 35 U.S.C. §103(a), *inter alia*, Applicants respectfully submit that claims 1-3, 5-10, 70, and 72 are also allowable over Hooven, Wang, and Lebouitz under 35 U.S.C. §103(a).

Claim 11 was rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Hooven, Wang, and Lebouitz, as applied to claim 9 above, and further in view of Racenet et al. (U.S. Application No. 2004/0267310).

Claim 11 depends from claim 1 and contains all of the features thereof. At least for the reasons presented above, it is respectfully submitted that the subject matter of claim 11, as a whole, is also patentable over Hooven, Wang, and Lebouitz in view of Racenet.

The Examiner relies on Racenet for the disclosure of either a linear or annular surgical stapler. However, even assuming the teachings of Racenet proffered by the Examiner (which applicants do not concede), Applicants submit that Racenet would fail to cure any deficiencies of Hooven, Wang, and Lebouitz as it relates to underlying independent claim 1 because Racenet fails to teach or suggest "...a plurality of discrete micro-electromechanical system (MEMS) devices selectively disposed from a proximal end to a distal end of the surgical instrument on the following portions of the surgical instrument: (i) a first end and a second end of the anvil assembly (ii) a first end and a second end of the staple cartridge assembly, (iii) the body member, and (iv) the handle assembly," as recited in amended independent claim 1.

In view of the foregoing, for at least the reasons that amended independent claim 1 is allowable over Hooven, Wang, and Lebouitz in view of Racenet under 35 U.S.C. §103(a), *inter*

alia, Applicants respectfully submit that the subject matter of claim 11, as a whole, is also allowable over Hooven, Wang, and Lebouitz in view of Racenet under 35 U.S.C. §103(a).

Claim 71 was rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Hooven and Lebouitz, as applied to claim 1 above, and further in view of Wang.

Since claim 71 depends from claim 1 and contains all of the features thereof. At least for the reasons presented above, it is respectfully submitted that the subject matter of claim 71 as a whole is also patentable over Hooven and Lebouitz in view of Wang.

Additionally, the Examiner relies on Wang for the disclosure of a plurality of MEMS devices positioned on an elongated body of a surgical instrument. However, even assuming the teachings of Wang proffered by the Examiner, Applicants submit that Wang fails to cure any deficiencies of Hooven and Lebouitz as it relates to underlying independent claim 1 because Wang fails to teach or suggest "...a plurality of discrete micro-electromechanical system (MEMS) devices selectively disposed from a proximal end to a distal end of the surgical instrument on the following portions of the surgical instrument: (i) a first end and a second end of the anvil assembly (ii) a first end and a second end of the staple cartridge assembly, (iii) the body member, and (iv) the handle assembly," as recited in amended independent claim 1.

In view of the foregoing, for at least the reasons that amended independent claim 1 is allowable over Hooven and Lebouitz in view of Wang under 35 U.S.C. §103(a), *inter alia*, Applicants respectfully submit that the subject matter of claim 71, as a whole, is also allowable over Hooven and Lebouitz in view of Wang under 35 U.S.C. §103(a).

Accordingly, it is respectfully submitted that Applicants' amendments and/or remarks overcome the rejections of the Final Office Action with respect to claims 1-3, 5-11 and 70-72 and put said claims in condition for allowance. Applicants request reconsideration and reexamination of the application in view of the amendments made to the claims and the remarks above.

In light of these amendments and remarks, favorable consideration and allowance of all outstanding claims are earnestly solicited. Should there be any questions after the Examiner's review of this paper, the Examiner is invited to contact the undersigned at either of the numbers indicated below.

Respectfully submitted,



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